

## **REMARKS**

### **Status of the Claims**

Claims 1 and 3-4 are pending in the application.

Claim 1 has been amended.

No new matter has been added.

Claims 2 and 5-8 were previously canceled without prejudice or disclaimer of the subject matter therein.

### **Claim Amendments**

Claim 1 has been amended to recite that the disclosed carbide material can be employed as a substrate for a surface coated gear cutting tool which is obtained by forming a metal carbonitride hard coat layer. Support for this amendment can be found at ¶¶ [0001], [0008] and [0048] of the Application as published. These amendments do not contain, nor constitute, new matter.

### **Rejections Under 35 U.S.C § 103**

On page 2 of the Office Action, the Examiner rejected claims 1, 3 and 4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,725,932 to Iio et al. ("Iio") in view of the Examiner's statement of ordinary skill in the art. The Examiner contends that the ranges, by percent weight, of the cemented carbide claimed in the present application overlap that of the substrate disclosed by Iio. Applicant respectfully traverses these rejections.

Amended claim 1 describes a cemented carbide based substrate material for forming a surface coated gear cutting tool. The substrate material is cemented carbide material from the system WC-βt-Co for a gear cutting tool. This is obtained by coating a hard material such as Aluminum or titanium carbonitride such as (Al, Ti)N, (Al, Ti)(N,C) by chemical or physical vapor deposition. The hard material coating can be successfully performed without necessitation to form the roughened surface of the cemented carbide material.

Amended claim 1 further describes a carbide material of the system WC-βt-Co that has a composition in the weight basis of 12~17% Co, 15~20%βt excluding WC, and the balance of WC, wherein the total content of the Ta and Nb carbonitrides is in a range of 5 to 8 weight%

Lastly, amended claim 1 describes a sintered hard alloy material in the system of WC- $\beta$ t-Co as a substrate for a metal carbonitride coated gear cutting hob.

In contrast, Iio points out a cemented carbide based substrate material for coating a hard material such as diamond. The substrate material disclosed by Iio is characterized in that the surface of the material substrate has a rough surface having a surface roughness of 2 to 20 $\mu$ m for fitting the CVD diamond thereon. The diamond coating is fitted and entangled on the roughened surface of the substrate, and the roughened substrate surface is formed by heat treatment in nitrogen at a temperature from 1350 to 1450°C for 0.5~5 hours for a cemented carbide material composed of TiC, TaC, Co and WC, and the cemented carbide material has a composition comprising in weight basis of 2~15% Co, 0.2~20%Ti and Ta carbide, and the balance of WC.

Therefore the Iio reference discloses a cemented carbide substrate for coating vapor grown diamond, used as a cutting chip for cutting Al-Si alloy.

It is clear that Iio fails to disclose a cemented carbide substrate material in the system of WC- $\beta$ t-Co directed to forming a gear cutting tool by coating the aluminum or titanium carbonitride coating. More importantly, Iio is not directed to the substrate material used for forming the coated gear cutting tool. In fact, Iio is merely directed to a cemented carbide substrate for forming diamond coated cutting chips. It would not be obvious, in light of Iio and what is know in the field, to achieve the same invention as described in amended claim 1. Iio, alone or in combination, In light of the foregoing remarks and amendments, Applicants submit that the cited reference fails to teach or suggest each and every feature of independent claim 1

In light of the foregoing, it is submitted that the rejection of claim 1 has been overcome and should be withdrawn. Claims 3-4 are dependent on claim 1. In light of the arguments put forward regarding claim 1, Applicant submits that claims 3-4 are non-obvious in light of the cited prior art.

**CONCLUSION**

In view of the foregoing arguments and claim amendments, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

The Examiner is respectfully requested to contact the undersigned at the telephone number indicated below if the Examiner believes any issue can be resolved through either a Supplemental Response or an Examiner's Amendment. In view of the above amendment, Applicant believes the pending application is in condition for allowance.

The Commissioner is hereby authorized to charge any unpaid fees deemed required in connection with this submission, or to credit any overpayment, to Deposit Account No. 50-4570.

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Respectfully submitted,

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